

SONY®

TAPECORDER TC-77M

OWNER'S INSTRUCTION MANUAL



SONY CORPORATION

Solid State

3 Motor 3 Head

Push Button Control

Studio Console Quality Tape recorder 777M

introduces you to an exciting new world of "living sound"

SOLID STATE

19 SONY transistors including 5 Mesa silicon types provide superior performance- --- over 3W OUTPUT, LESS HUM and NOISE compared to vacuum tube units.

THREE MOTOR SYSTEM

One motor each for the Capstan Drive, Fast Forward and Rewind for accurate and stable operation.

THREE HEAD SYSTEM

Record, Playback, Erase Heads function to record and playback independently for instantaneous monitoring of recorded program while recording.

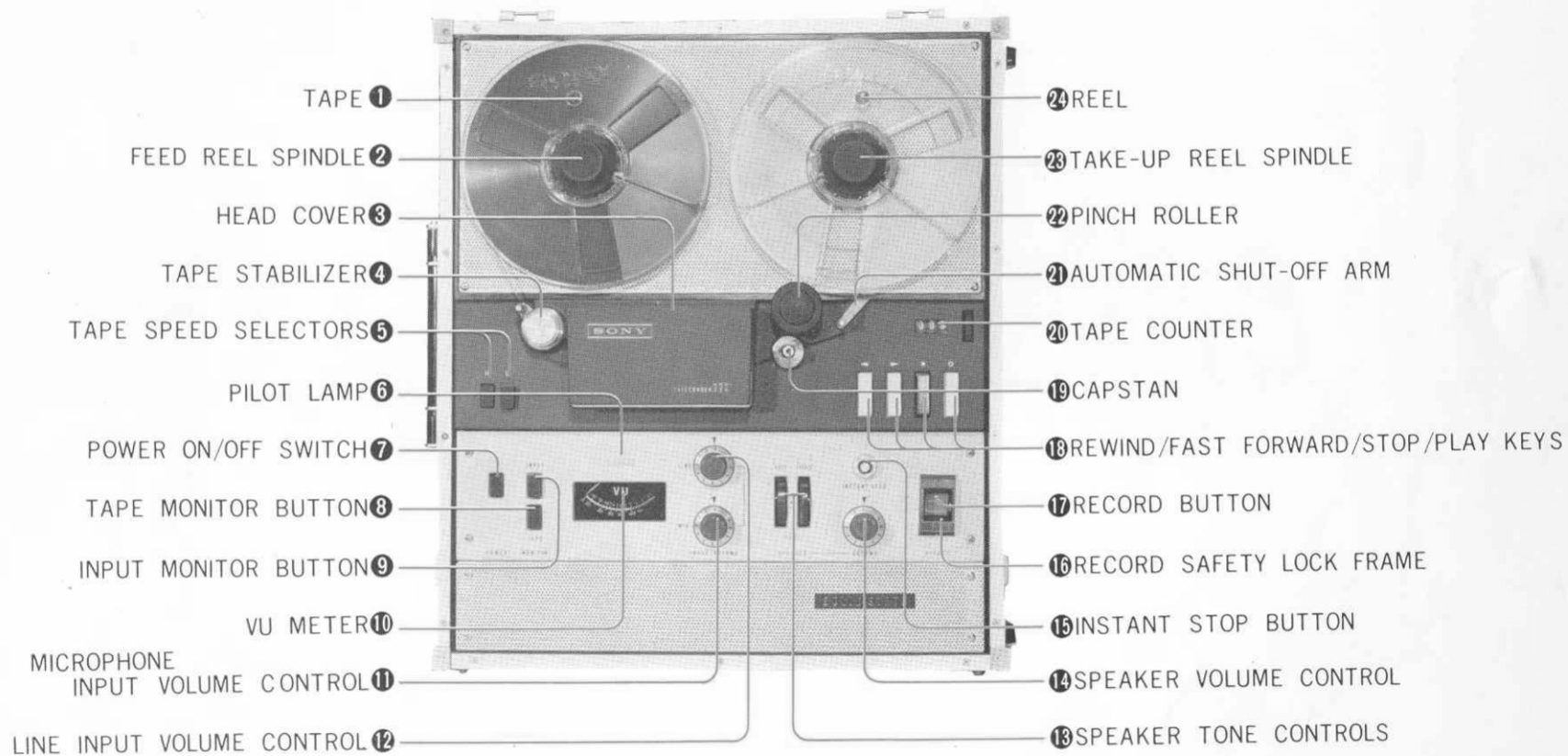
PUSH BUTTON CONTROL

REWIND/FAST FORWARD/STOP/PLAY functions can be selected and controlled by feather touch of piano type keys.

REMOTE CONTROL

All tape motion functions together with record mode selection can be controlled from a remote point ---- an outstanding feature of the 777M.

Location of Controls



Inputs and Outputs

REMOTE CONTROL CONNECTOR 25

FUSE RECEPTACLE 26

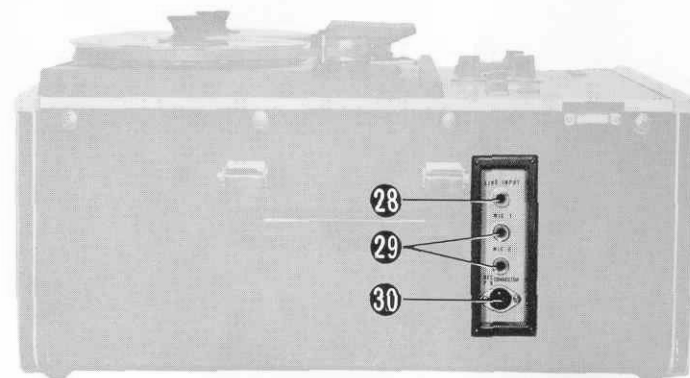
POWER RECEPTACLE 27



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MONITOR OUTPUT 34

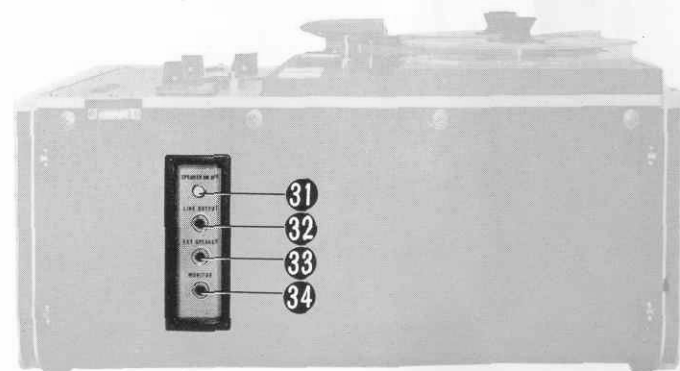


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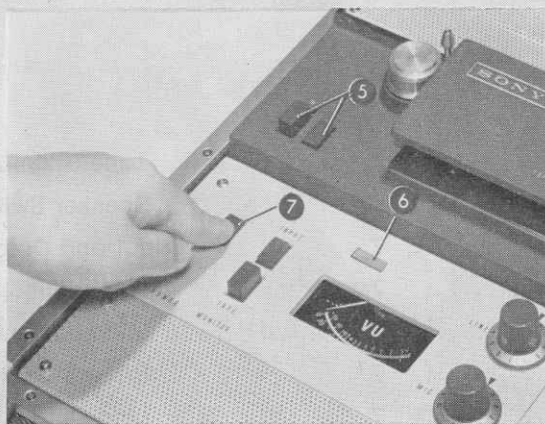
Instructions for Simple Operation



Take out the power line cord, tape, empty reel and microphone from the accessory bag.

1. To Connect the Power Line

Insert the round plug of the power line cord into the Power Receptacle 27 of the recorder and the other plug into an AC outlet.

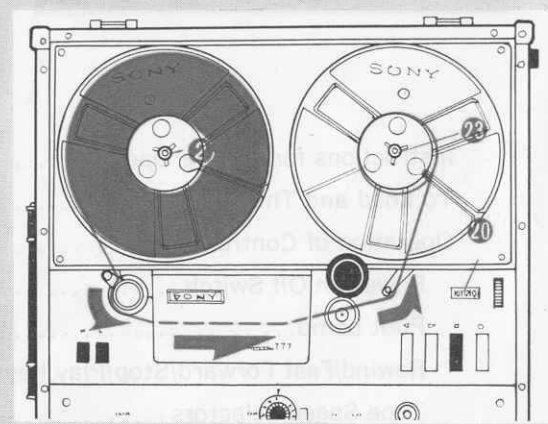


2. To Turn On Power

Press the Power On/Off Switch 7 down. The Pilot Lamp 6 above the VU Meter will light when the recorder is turned on.

3. To Select Tape Speed

Select the desired tape speed of either $7\frac{1}{2}$ ips (19 cm/s) or $3\frac{3}{4}$ ips (9.5 cm/s). For $7\frac{1}{2}$ ips (19 cm/s), press the Tape Speed Selector 5 marked [H]. For $3\frac{3}{4}$ ips (9.5 cm/s), press the Tape Speed Selector marked [L].



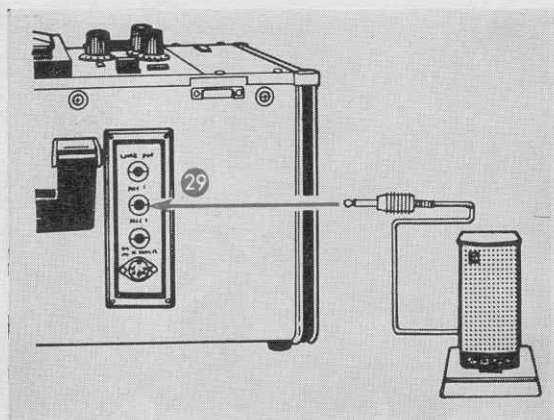
4. To Load and Thread Tape

Place full reel of tape on the Feed Reel Spindle (left) 2 and an empty reel on the Take-up Reel Spindle (right) 23.

Thread the tape as shown in the illustration. Use the two Reel Caps to retain reels (see page 6).

Rotate forward the Reset Wheel at the right of the Tape Counter 20 until three zeros [000] appear in the window of the Tape Counter.

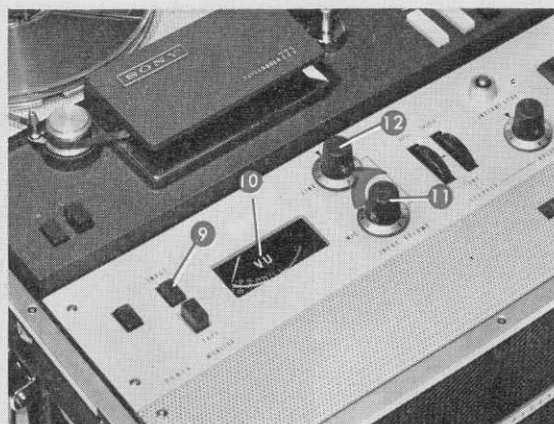
Note: The Reset Wheel operates only when rotated forward.



5. To Connect the Microphone

Plug the supplied Microphone into the Microphone Input 29 marked [MIC-1]. When two microphones are used, plug one microphone into the Microphone Input marked [MIC-1] and the other microphone into the Microphone Input marked [MIC-2].

See page 12 concerning how to connect when recording directly from radio, TV, etc.

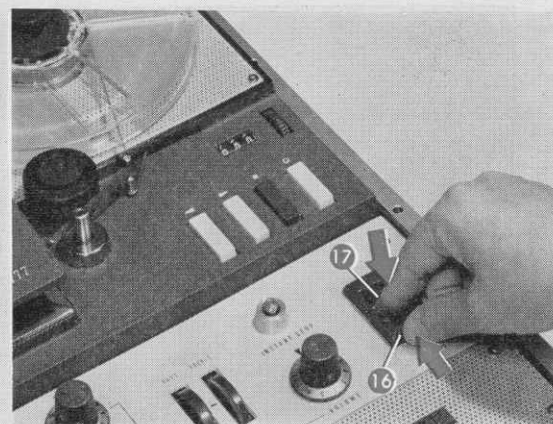


6. To Adjust Recording Level

Press the Input Monitor Button 9.

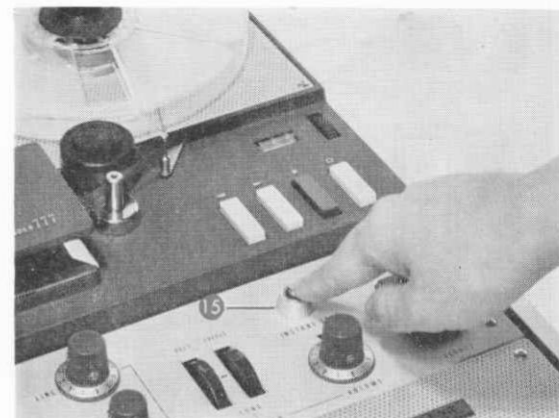
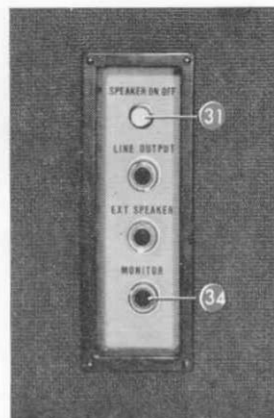
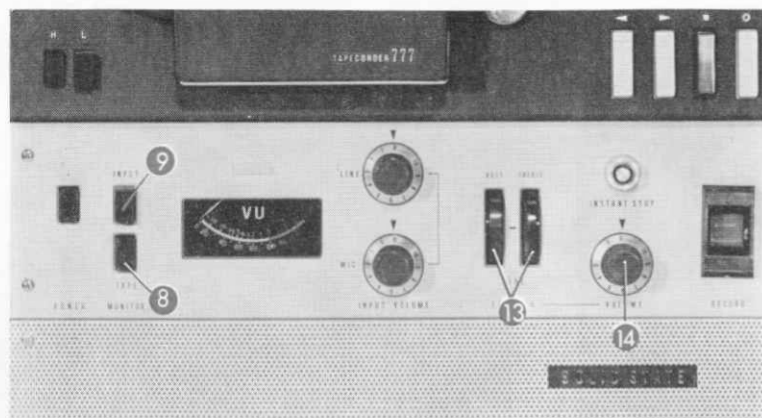
To obtain the desired recording level, adjust the Microphone Input Volume Control 11 when the Microphone Inputs are in use; the Line Input Volume Control 12 when the Line Input is in use.

The VU Meter 10 is provided for accurate recording level indication. Adjust the recording level so that at peak volume the pointer of the VU Meter swings just to the boundary of the red and white zones.



7. To Start Recording

Slide the Record Safety Lock Frame 16 forward and press the Record Button 17 at the same time. The button gleams and the recorder is now in record mode.



◇ To Monitor Recording Contents

The input source (the sound being recorded) and the recorded result (the sound having been recorded) can be monitored.

- 1) To monitor the input source
Press the Input Monitor Button ⑨ and the Speaker Switch ③ down (ON position). The input source can be monitored through the built-in speaker during recording.
- 2) To monitor the recorded result while recording
Press the Tape Monitor Button ⑧ and the Speaker Switch down (ON position). The recorded result can be monitored through the built-in speaker without releasing record mode.
The desired sound volume and the tone quality from the built-in speaker can be obtained independently of the recording level and quality, by adjusting the Speaker Volume Control ⑭ and the Speaker Tone Controls ⑮.

* If howling effect occur while recording with a microphone,

- a. Place the microphone away from the speaker.
 - b. Decrease the speaker volume level.
 - c. Monitor using an earphone. See item 3).
 - d. Disconnect the built-in speaker by pressing the Speaker Switch; the switch will be up.
- 3) To monitor with an earphone
Insert a SONY Crystal Earphone CE-4 (optional) into the Monitor Output ④.
Turn the Speaker Volume Control extremely counter-clockwise to the mark [0].
To monitor the input source, press the Input Monitor Button.
To monitor the recorded result, press the Tape Monitor Button.

* In monitoring with an earphone through the Monitor Output, the Speaker Tone Controls do not function.

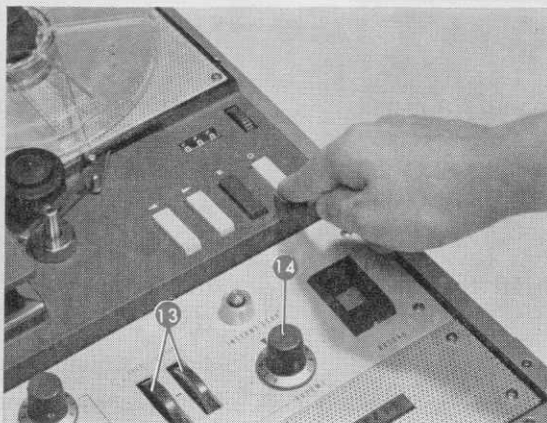
◇ To Stop Tape Instantly

To stop tape motion instantly while recording, press the Instant Stop Button ⑮ until ready to release.



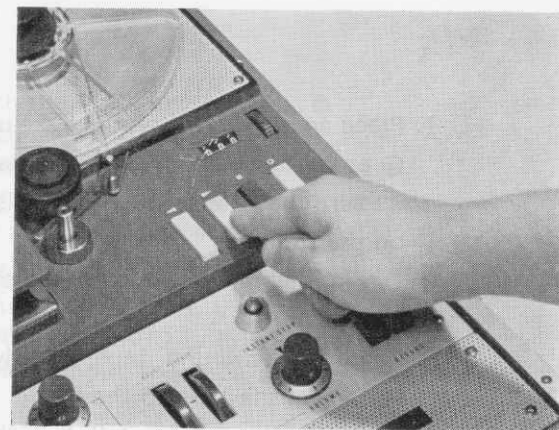
8. To Rewind Tape

Press the Rewind Key marked [◀] to rewind the tape and when [000] appears again on the Tape Counter 20, press the Stop Key marked [■]; the recorder is now in playback mode.



9. To Play Back

Press the Tape Monitor Button first and then the Play Key marked [▶]. Adjust the Speaker Volume Control 14 and the Speaker Tone Controls 13 for the desired sound volume and tone quality.



◇ To Move Tape Fast Forward

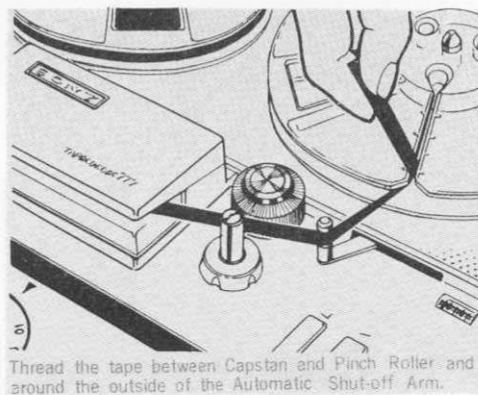
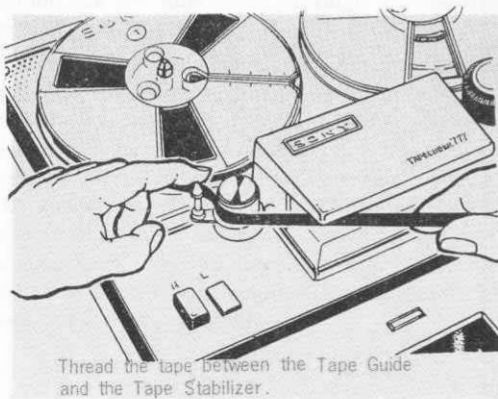
Press the Fast Forward Key marked [▶▶] to move the tape forward quickly to a desired position. To stop fast forward tape motion, press the Stop Key, then the Play Key for playback.

To Load and Thread Tape

1. Place an empty reel on the Take-up Reel Spindle (right) ②③ and a full reel on the Feed Reel Spindle (left) ②. Be sure that the slots of the reels are engaged firmly on the spindles.
2. Unwind approximately 1½ feet of tape from the full reel.
3. Keep the unwound tape slightly taut with the dull surface of the tape to the inside.
Bring the tape from left to right between the Tape Guide and the Tape Stabilizer ④, under the Head

Cover ③, between the Capstan ①⑨ and the Pinch Roller ②② and around the outside of the Automatic Shut-off Arm ②①.

4. Wrap the free end of the tape around the empty reel hub or insert in a slot provided on the empty reel.
Give the empty reel a few turns so that the tape is firmly wound around the reel.
The recorder is now ready for recording or playback.
5. Place the two Reel Caps on the spindles above the tape reels.



Operation of Controls

The following is the description of how the controls and indicators operate.

The number at the back of each Control name corresponds with the number in the "Location of Controls".

POWER ON/OFF SWITCH 7

Designated [POWER], this switch turns the recorder on and off.

To turn on the recorder, press this button down.

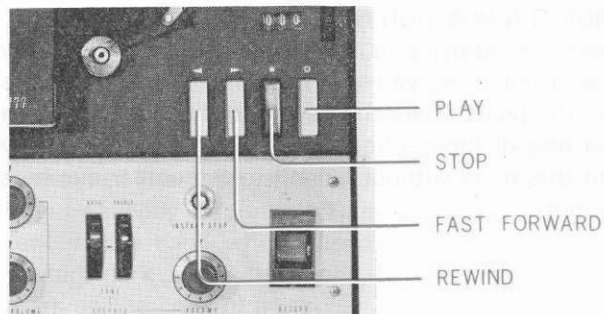
To turn off the recorder, press this button again; the button will come up.

PILOT LAMP 6

This lamp will be illuminated when the recorder is turned on.

REWIND/FAST FORWARD/STOP/PLAY KEYS 18

The four feather touch piano type keys control tape motions (REWIND/FAST FORWARD/STOP/PLAY functions) completely.



For PLAY function, touch the white key marked [●].

For STOP function, touch the gray key marked [■].

For REWIND function, touch the white key marked [◀].

For FAST FORWARD function, touch the white key marked [▶].

Note: Do not change from FAST FORWARD or REWIND to PLAY until the tape comes to a complete stop. Change from FAST FORWARD to REWIND (or vice versa) is possible without the tape coming to a complete stop.

TAPE SPEED SELECTORS 5

Designated [H] and [L] respectively, these selectors select the desired speed of either 7½ ips (19 cm/s) or 3¾ ips (9.5 cm/s), and automatically set the proper recording and playback characteristics for each speed. For 7½ ips (19 cm/s), press the selector marked [H] and for 3¾ ips (9.5 cm/s), press the selector marked [L].

Note: Select the tape speed before loading the tape. Do not change speed while the tape is in motion.

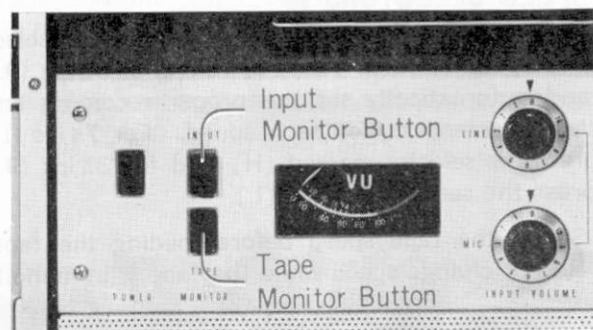
INPUT MONITOR BUTTON ⑨

TAPE MONITOR BUTTON ⑧

Designated [INPUT] and [TAPE] respectively with [MONITOR] at the bottom, these buttons are used to monitor recording contents.

To monitor the actual input source during recording, press the Input Monitor Button. To monitor the actual recorded result immediately while recording, press the Tape Monitor Button.

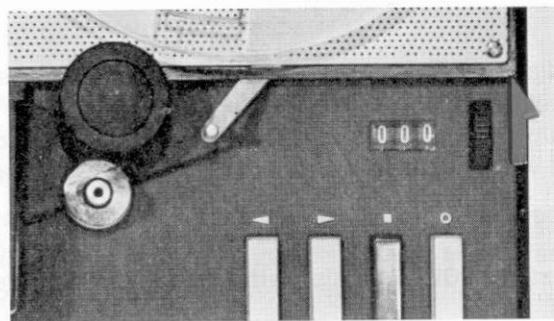
Note: For playback, the Tape Monitor Button must be used.



TAPE COUNTER ⑩

This counter with the Reset Wheel on the right indicates the amount of tape used in recording or playback.

This counter can be used in many ways. Some of the more useful are;



FOR INDICATING A TAPE POSITION

Set the numbers to [000] when a full reel of tape is loaded and threaded. Begin recording; the Tape Counter will then indicate how much tape has been recorded.

FOR INDEXING

Make a note on the tape box or elsewhere as the recording is made;

- 000-144 Radio Recording.
- 145-195 Bob Sings.
- 196-255 Mary Makes a Speech... etc.

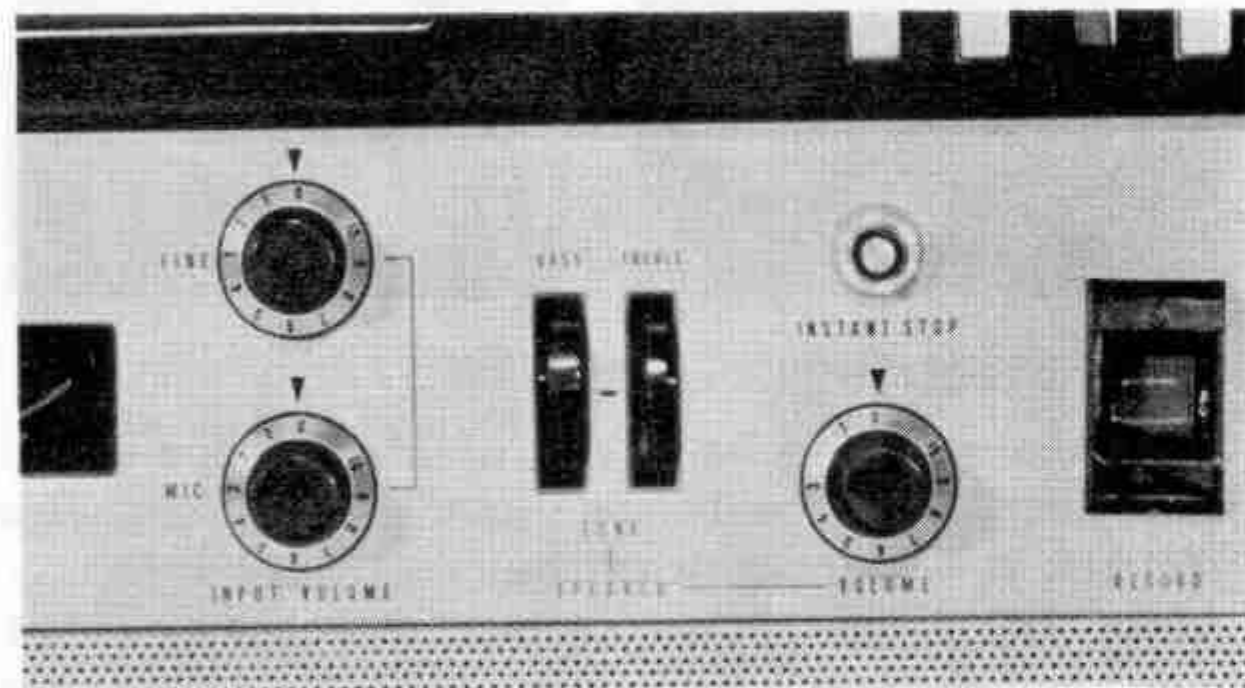
FOR FINDING A POSITION ON THE TAPE

When you are starting a new recording on an already partly recorded tape, you may set the Tape Counter to [000] at the point where the new recording starts. When the recording of this section is completed, you can easily return to this point without having to remember numbers or make notes.

SPEAKER VOLUME CONTROL ①

Designated [VOLUME], this control increases or decreases volume level of the built-in speaker and the External Speaker Output in playback mode.

Note: In monitoring with an earphone through the Monitor Output, the Speaker Volume Control does not function.



SPEAKER TONE CONTROLS ②

Operated by the two wheels designated [BASS] and [TREBLE] respectively with [TONE] at the bottom, these controls increase or decrease BASS and TREBLE tone from the built-in speaker.

The left wheel marked [BASS] controls the low frequency response. The right wheel marked [TREBLE] controls the high frequency response. To emphasize BASS or TREBLE tone, rotate each wheel forward. For flat response, the center mark on each wheel should be set to the black mark on the control panel.

Note: The Speaker Tone Controls function only in playback mode. They do not control the tone quality either in record mode or in monitoring with an earphone through the Monitor Output.

MICROPHONE INPUT VOLUME CONTROL ③

LINE INPUT VOLUME CONTROL ④

Designated [LINE] and [MIC] respectively with [INPUT VOLUME] at the bottom, these controls increase or decrease the recording level of the input.

The Line Input Volume Control marked [LINE] controls the volume from the Line Input and the Microphone Input Volume Control marked [MIC] controls the volume from the Microphone Inputs.

The Line Input and the Microphone Input can be used at the same time and the inputs can be MIXED, or controlled at the same time by adjusting volume level with each Input Volume Control.

For instance, the Line Input can be used to provide low level "Background Music" while the Microphone Input is used for voice. The use of two separate volume controls on the recorder permits very versatile operation when several sound sources are to be recorded at the same time.

VU METER ⑤

The VU Meter, or Recording and Playback Level Meter, is a professional type meter calibrated according to NAB standards and indicates precisely the recording input to the Record Head and the recorded output from the Playback Head.

The pointer of the meter should swing just to the boundary of the red and white zones for the best recording result.

The exact recording level will be indicated in the VU Meter when the Input Monitor Button is depressed in record mode. The output from the Playback Head will be indicated when the Tape Monitor Button is depressed in playback mode.

A line output of 0db (0.775V) will be obtained at an indication of 0 VU when the Line Output Load is 10K ohms.

RECORD BUTTON ⑰

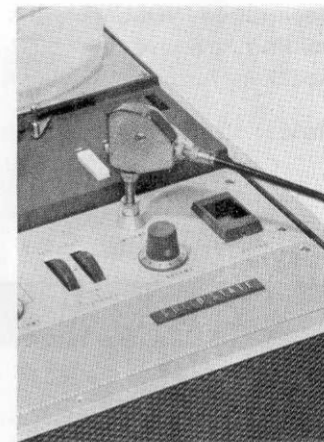
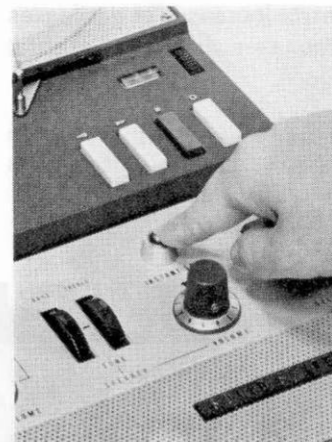
Designated [RECORD] and recessed in the Record Safety Lock Frame, this button sets the recorder in record mode. The Record Safety Lock Frame is to prevent accidental erasure of pre-recorded tapes.

Push the Record Safety Lock Frame slightly forward and press the Record Button at the same time. The red lamp under the button will gleam indicating the recorder is now in record mode.

INSTANT STOP BUTTON ⑮

Designated [INSTANT STOP], this button instantly stops forward motion of the tape either in record or playback mode. This button can be used in conjunction with the SONY Foot Switch FS-3 (optional) for very convenient editing and cueing of the tape. Both reels can still be rotated by hand while the button is depressed.

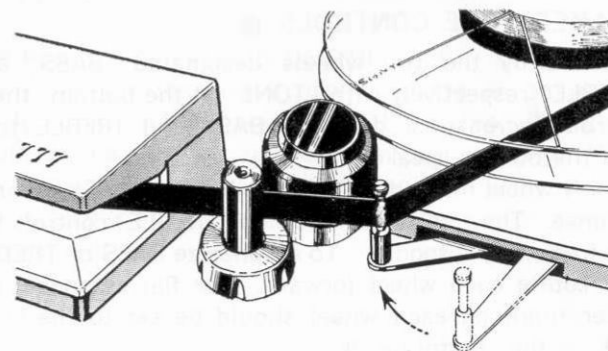
Note: The distance between the Head and the Lock Nut of the Foot Switch should be 21 mm when adjusting the Foot Switch for use with this recorder.



AUTOMATIC SHUT-OFF ARM ⑳

When the tape is loaded on the recorder, the arm should be in the operating position as shown in the picture. This arm also acts as a tape tension guide.

Note: Mechanism will not operate when the tape runs off the feed reel and the arm swings back to the right.



TAPE STABILIZER ④

The Tape Stabilizer used in this recorder is a professional type and reduces wow and flutter to a minimum.

Note: In threading the tape, be sure to bring the tape counter-clockwise through the Tape Guide and the Tape Stabilizer.

SPEAKER SWITCH ⑤

Designated [SPEAKER ON/OFF], this switch disconnects the built-in speaker in record mode to avoid the howling effect which may occur while recording with a microphone. To connect the built-in speaker, press the Speaker Switch down (ON position).

To disconnect the built-in speaker, press the switch again; it will be up (OFF position).

Note: The Speaker Switch does not control the built-in speaker in playback mode.

* Public Address System

The built-in amplifier of the recorder can be used as a Public Address System with the connection to external speakers.

Keep the tape in STOP position and set the Speaker Switch down (ON position). Connect the external speakers and press the Input Monitor Button.

Input and Output Connections

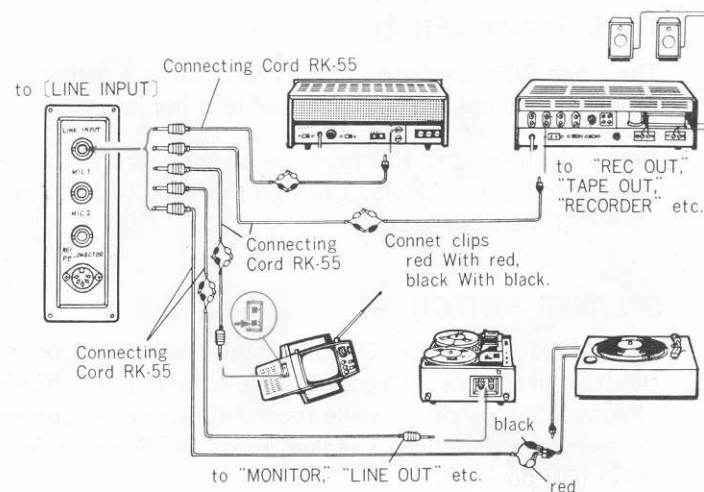
LINE INPUT 28

Designated [LINE INPUT], this jack is for recording from any components that deliver a signal of more than 0.15 volts, such as AM/FM tuners, TV, tape recorders or pre-amplifier "recorder" outputs. This jack is of the standard phone type and will accept the standard phone plug. The input is high impedance.

When recording from magnetic phono cartridge or tape heads, they must be connected through proper pre-amplification.

Crystal phono cartridges can be connected directly to this jack.

The built-in amplification of the recorder can be used to connect external components for public address (see "SPEAKER SWITCH", page 11)



MICROPHONE INPUTS 29

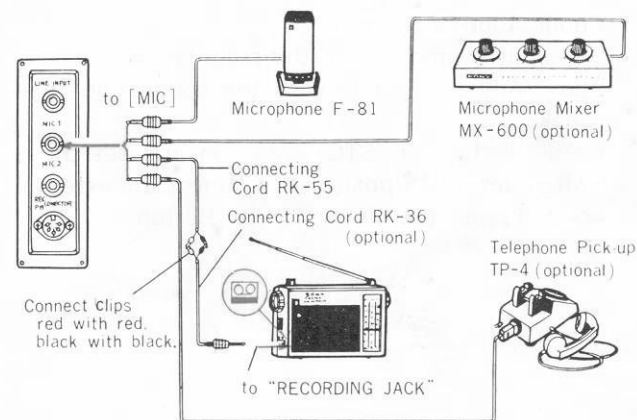
Designated [MIC-1] and [MIC-2] respectively, these jacks are of 600 ohm impedance and designed for the SONY Microphone F-81 (supplied) or any high quality dynamic or condenser microphone of the low impedance variety. These are of the standard phone type and will accept the standard phone plug.

When using one microphone, connect it to the Microphone Input marked [MIC-1]. When using two microphones, connect them to the Microphone Inputs marked [MIC-1] and [MIC-2] respectively.

For recording of telephone conversation, insert the plug of the SONY Telephone Pick-up TP-4 (optional) into the jack marked [MIC-1].

For recording of radio or TV programs, connect recording jack of a SONY radio or TV and the Microphone Input marked [MIC-1].

For mix recording, use SONY Microphone Mixer MX-600 (optional) ... three-channel, 600 ohm Microphone and/or Line Input mixer with independent volume control for each channel; insert the output plug of the MX-600 into the Microphone Input.



INTEGRATED RECORD/PLAYBACK CONNECTOR ③①

(DIN* CONNECTOR)

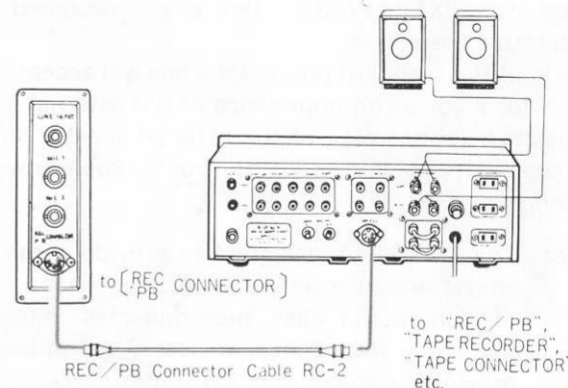
Designated [REC/PB CONNECTOR], this is a 5-pin connector for connecting to an external high fidelity amplifier system equipped with a corresponding 5-pin record/playback connector.

(*Deutsche Industrie Normen)

A special SONY REC/PB Connector Cable RC-2 is supplied for connecting an external high fidelity system to this connector in recording or playback.

Note: When a high fidelity amplifier is connected to the recorder, the recording level of the recorder can be adjusted only by the Microphone Input Volume Control ①, independently of the sound volume of the amplifier.

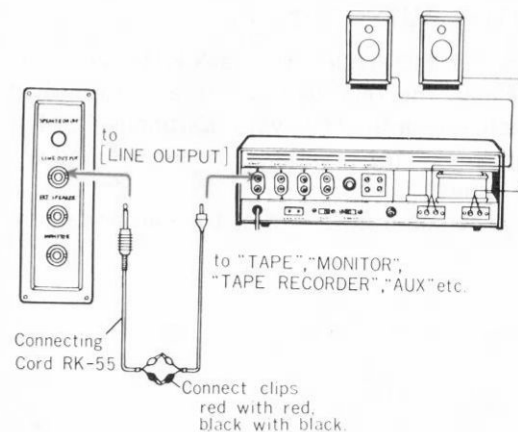
The playback level of the recorder can be adjusted only by the volume control of the amplifier, independently of the sound volume of the recorder.



LINE OUTPUT ③②

Designated [LINE OUTPUT], this jack is used for connecting the recorder to external pre-amp/amplifiers.

This jack is of the standard phone type and will accept the standard phone plug. The output is high level 600 ohm impedance. The line output bypasses the built-in speaker amplifiers of the recorder. This jack operates either in record or playback mode. When playback through the external amplifier, adjust the speaker volume level of the recorder to minimum with the Speaker Volume Control.

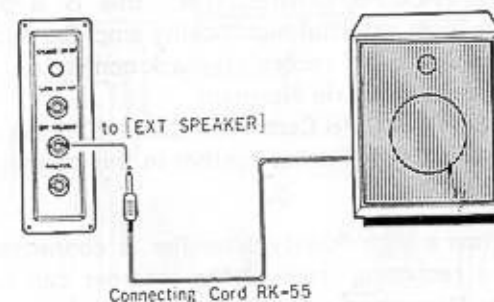


EXTERNAL SPEAKER OUTPUT ㊦

Designated [EXT SPEAKER], this jack is designed for connecting to an external speaker.

This is of the standard phone type and will accept the standard phone plug. Ideal voice coil impedance of the external speaker is 8 ohms. Connect the phone plug of the external speaker and this jack using the supplied connecting cord; the built-in speaker will be automatically disconnected.

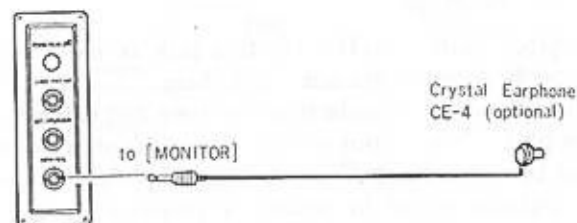
Note: The recorder is designed to provide a maximum 3W output when the connected external speaker has a voice coil impedance of 8 ohms. In case the connected external speaker has a voice coil impedance of over 8 ohms, the recorder will not provide the maximum 3W output.



MONITOR OUTPUT ㊦

Designated [MONITOR], this jack is designed for monitoring the input source and the recorded result and for private listening with the connection of a SONY Crystal Earphone CE-4 (optional) to this jack. This jack is of the standard phone type and will accept the standard phone plug.

Ideal voice coil impedance of the earphone is over 10K ohms.



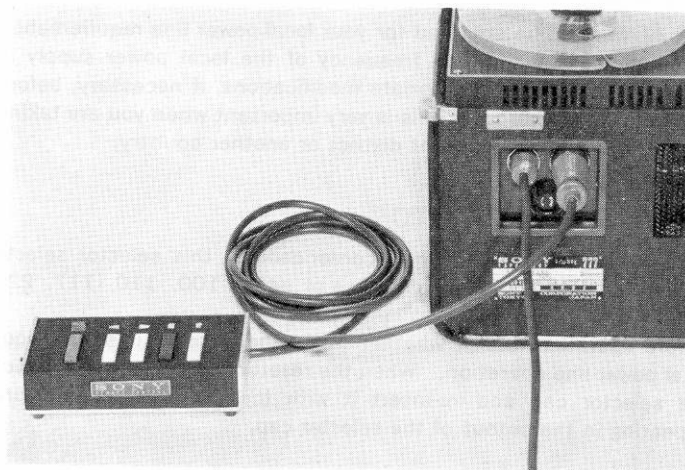
REMOTE CONTROL CONNECTOR 25

A Remote Control unit with a 10 foot connecting cord is supplied for operation from a distance. The PLAY/STOP/REWIND/FAST FORWARD Keys of the unit, with the same marks as on the recorder control panel, function in the same manner as described in "Operation of Controls", page 7.

The red Record Key with the Record Lamp above the key, marked [RECORD], sets the recorder in record mode.

The Record Safety Lock Button is provided on the left side of the unit to prevent accidental erasure of pre-recorded tape.

To connect the Remote Control unit to the recorder, insert the octal plug at the end of the cord to the Remote Control Connector 25 of the recorder (the keyway will insure proper continuity). To record, press the Record Safety Lock Button and then the Record Key. The Record Lamp will light up indicating that the recorder is now in record mode.



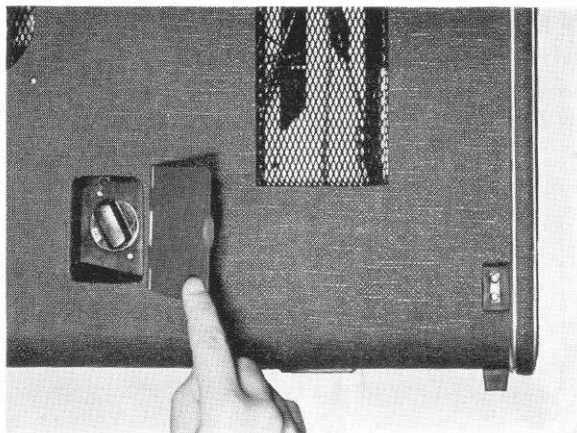
Adaptation to the Local Power Line

The 777M must be adjusted for your local power line requirements. Check the voltage and line frequency of the local power supply in your area and make appropriate modifications, if necessary, before operating this recorder. This is very important when you are taking this recorder into a different district or another country.

AC VOLTAGE SELECTOR

Located at the bottom of the recorder cabinet, this selector selects the operating AC power line voltage of either 100, 110, 117, 220 or 240 volts.

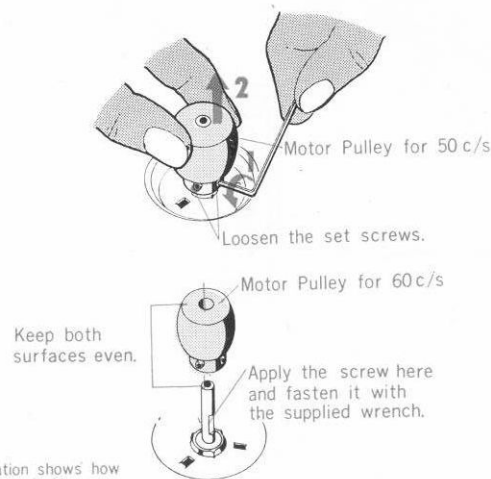
Before operation, check whether or not the recorder is set for your local power line operation. When the resetting is necessary, pull out the selector cap and re-insert it with the proper voltage figure appearing in the cutout of the selector cap.



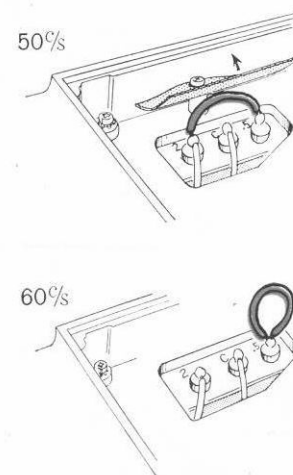
FREQUENCY REQUIREMENTS

Motor Pulley and tapping of the Motor Capacitor must be altered if the line frequency differs from what the recorder is adjusted for.

1. Remove the Reel Panel by loosening the cabinet screws at each corner. A Motor Pulley locates between the two reel spindles. Loosen the set screws of the Motor Pulley and pull out the Motor Pulley. The larger pulley is for 50 c/s while the smaller one is for 60 c/s.
2. The Motor Capacitor Terminals locate on the left side of the chassis. For 50 cycle line frequency, the two terminals at both ends should be connected by the Shorting-Lead wire; for 60 cycle line frequency the Shorting-Lead wire should be soldered on the right terminal as shown in the illustration.

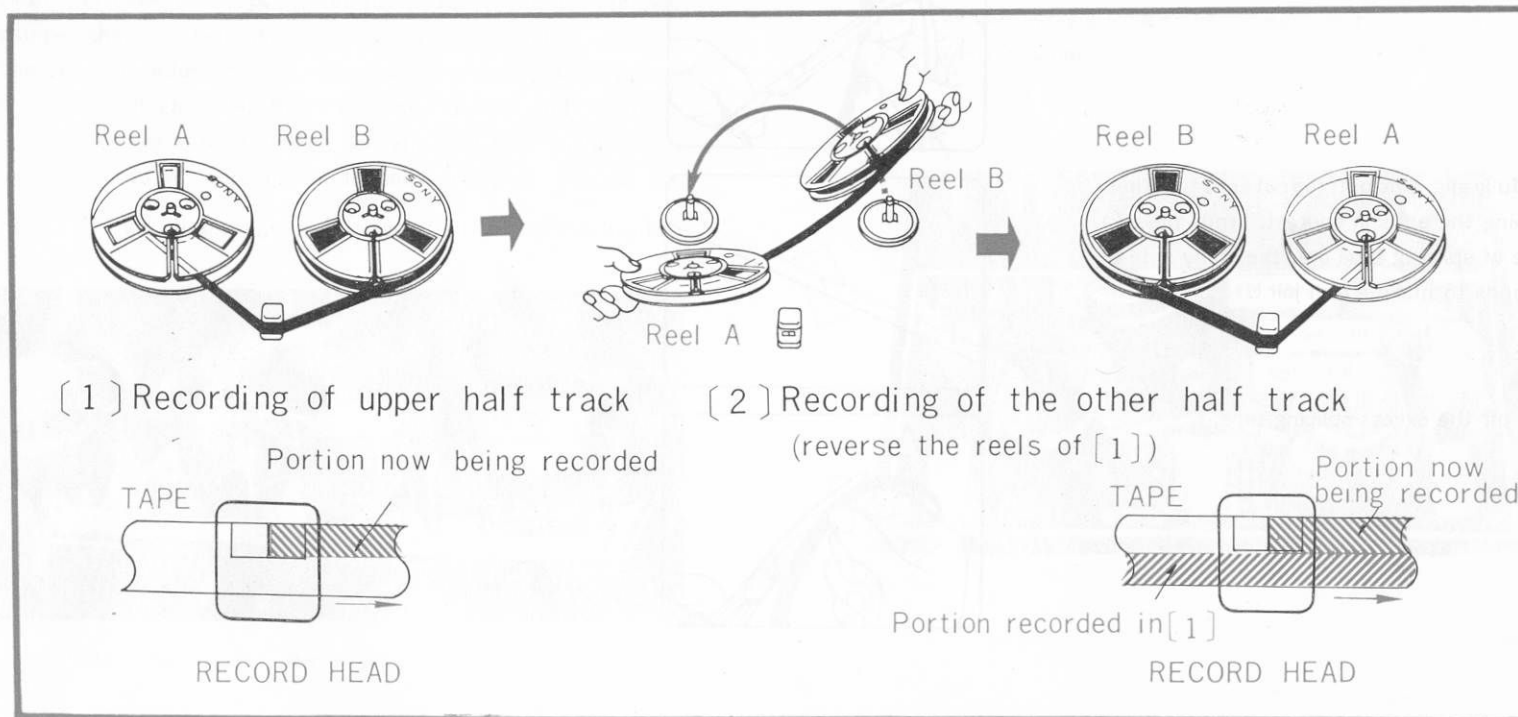


This illustration shows how to change 50 c/s Motor Pulley to 60 c/s Motor Pulley.



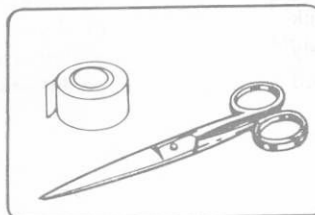
Notes on Dual-Track Recording

This recorder can record two tracks on one tape (dual-track system), providing double the recording time of a single-track system. When the upper half track of the tape is completely recorded, invert both reels and reverse their positions. Proceed with recording on the other half track.

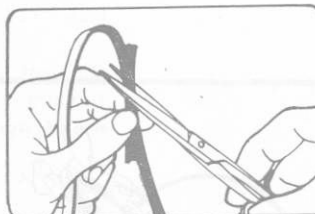


To Splice Tape

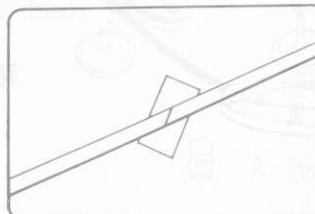
1. Use splicing tape and a pair of scissors.



2. Overlap the recording tape and make a diagonal cut across both tapes.



3. Carefully align and butt the cut ends together. Keeping the ends in contact, firmly press a piece of splicing tape over the shiny side of the ends to make a firm joint.



4. Trim off the excess splicing tape.



Maintenance

CLEANING HEADS

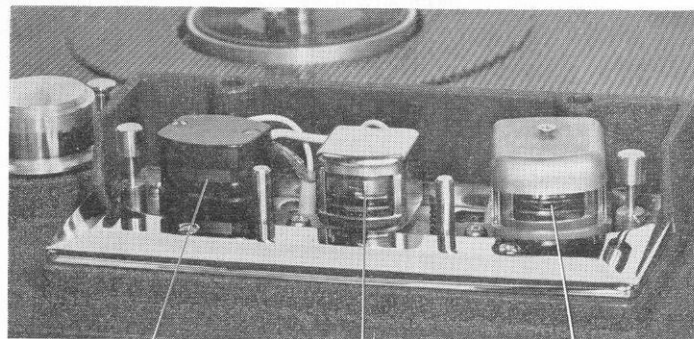
An intimate contact between heads and tape is important for optimum performance. Generally, clean heads after every 10 hours of use or when necessary.

To Clean

Remove the Head Cover by loosening the two screws located at the back of the cover with a screwdriver and carefully wipe the portion of the heads over which the tape travels with a soft clean cloth. In case the deposits on the head cannot be removed, dampen the soft clean cloth with denatured alcohol.

The same procedure is recommended for cleaning the surfaces of Capstan, Pinch Roller, Stabilizer, Tape Guides and Automatic Shut-off Arm to prevent slippage of tape, bad tone quality which may be caused by improper contact between tape and heads, etc.

Note: Do not bring magnets or piece of steel near the heads.



Erase Head

Record Head

Playback Head

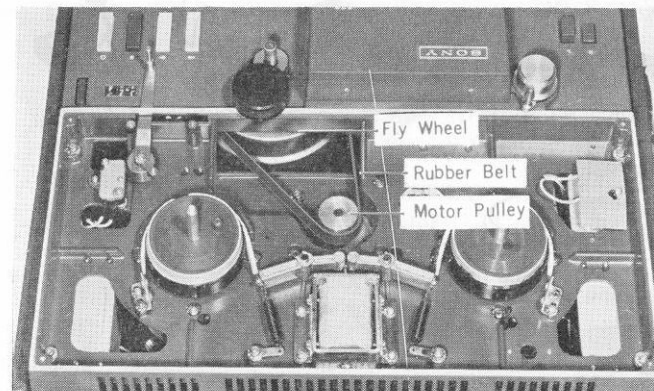
CLEANING MECHANISM

After about 6 months of use, the drive mechanism under the top panel should be cleaned with denatured alcohol.

To Clean

Remove the top panel by loosening the four securing screws located at each corner and carefully wipe the Rubber Belt, Motor Pulley and Fly Wheel with a piece of a soft clean cloth dampened with denatured alcohol.

Note: Do not apply strong solutions such as thinner or benzine while cleaning.



Fly Wheel

Rubber Belt

Motor Pulley

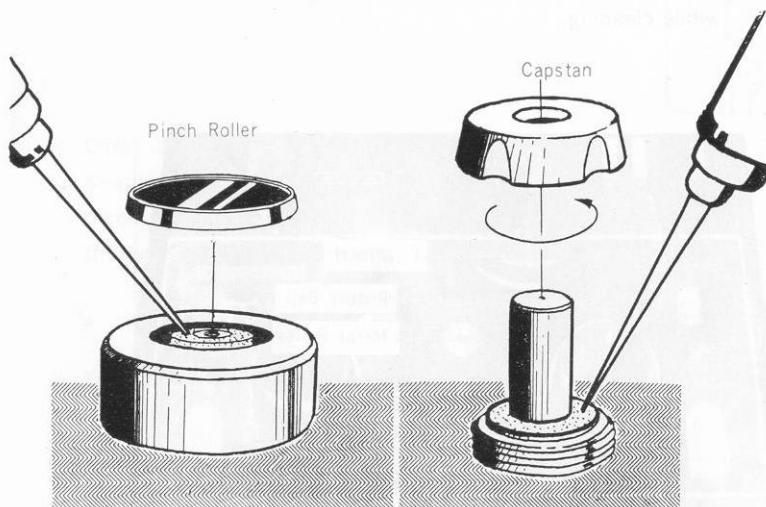
Lubrication

Lubrication of the mechanism is required at every 300 hours of operation.

Oil a drop of SONY Oil OL-1K (supplied) or light machine oil to the Capstan and the Pinch Roller.

Note: Avoid excessive lubrication which will contaminate drive surfaces and cause slippage in the mechanism.

Lubrication of the motor requires special technique, so ask your SONY dealer to handle it.



Technical Specifications

Power Requirements: 90 watts, 100, 110, 117, 220 or 240 volts,
50/60 cycles

Tape Speeds: Instantaneous selection $7\frac{1}{2}$ ips (19 cm/s)
or $3\frac{3}{4}$ ips (9.5 cm/s)

Recording Track: Double track

Reel Size: Up to 7"

Mode Selection: Push button system with remote control
facility

Operating Angle
Position: Horizontal or Vertical

Frequency Response: 30-17,000 cps at $7\frac{1}{2}$ ips (19 cm/s)
30-10,000 cps at $3\frac{3}{4}$ ips (9.5 cm/s)

Signal-to-Noise
Ratio: Over 50 db

Harmonic Distortion: Less than 3% when recorded at normal
recording level
(12 db below saturation of tape)

Tone Controls: Bass ± 10 db at 50 cps
Treble ± 10 db at 10,000 cps

Recording Level
Indicator: VU Meter

Monitor: From input or tape while recording

Erasing Effect: Over 65 db

Flutter and Wow: Less than 0.15% RMS at $7\frac{1}{2}$ ips (19 cm/s)

Timing Accuracy: Within $\pm 1\%$

Fast Forward and
Rewind Time: Within 105 seconds using a 1,800 ft. tape

Transistors: 2SB381 (8), 2SB382 (5), 2SB26 (1),
2SC293 (3), 2SC292 (2)

Diodes: S2A-10 (2), IS-123 (1)

Varistor: IS-358 (1)

Bias Frequency: 92 kc $\pm 10\%$

Heads: Erase—1, Record—1, Playback—1

Inputs: For Microphone—2, Low impedance,
unbalanced (600 Ω)
For High Level Signal—1, High impedance,
unbalanced

Outputs: For External Speaker—1, Output power
3W across 8 ohm Load
For External Amplifier—1, Load impedance
not less than 10k Ω , Normal output level
0 db
For Monitoring—1

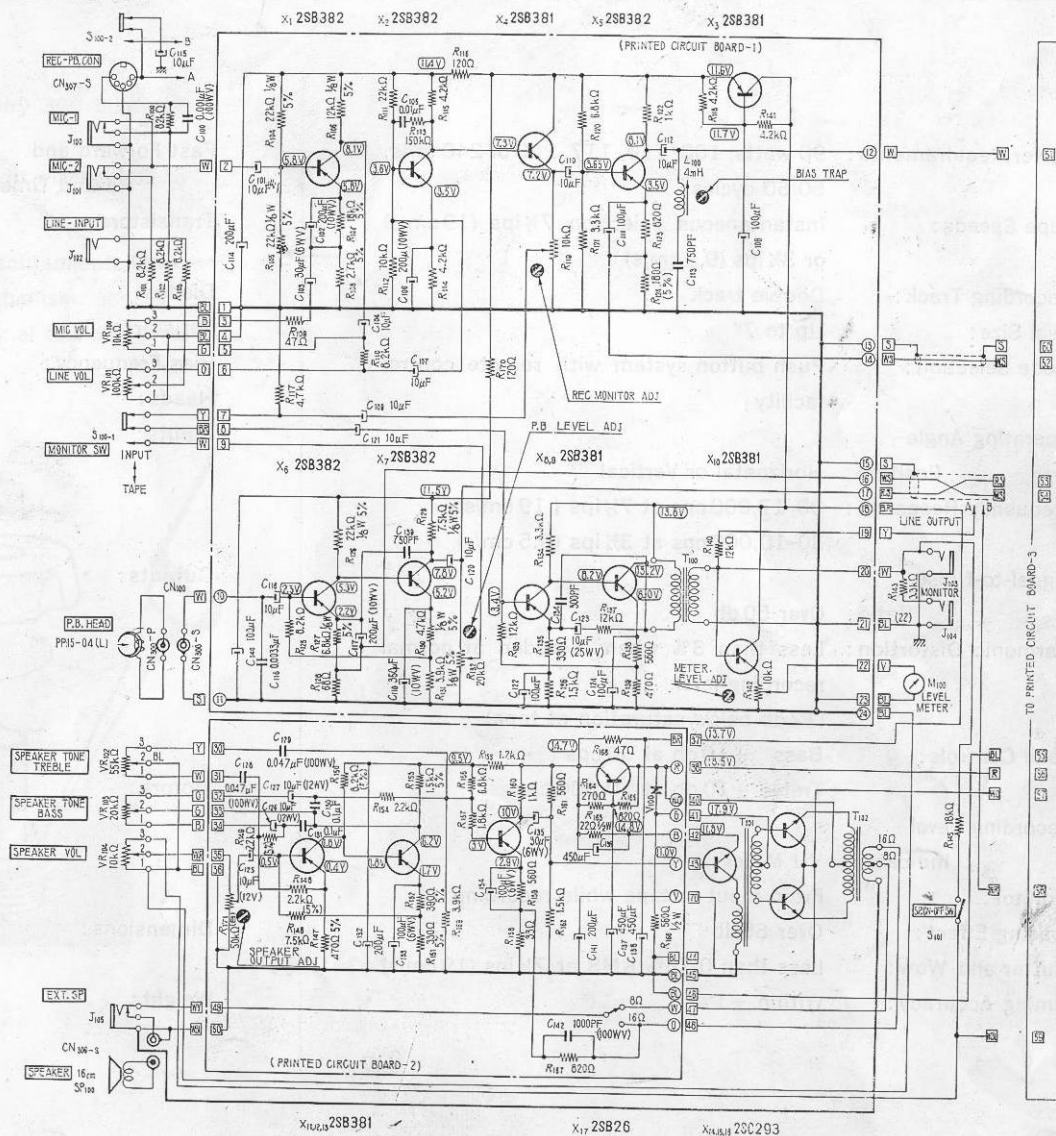
Motors: Driving Motor—1, 4 pole Hysteresis Syn-
chronous Motor
Reel Spindle Motor—2, 4 pole Induction
Motor

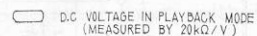
Dimensions: $16\frac{1}{4}$ "W \times $10\frac{1}{4}$ "H \times $18\frac{3}{4}$ "D (412 W \times 260 H \times
477D mm)

Weight: Approx. 42 lbs (19 kg)

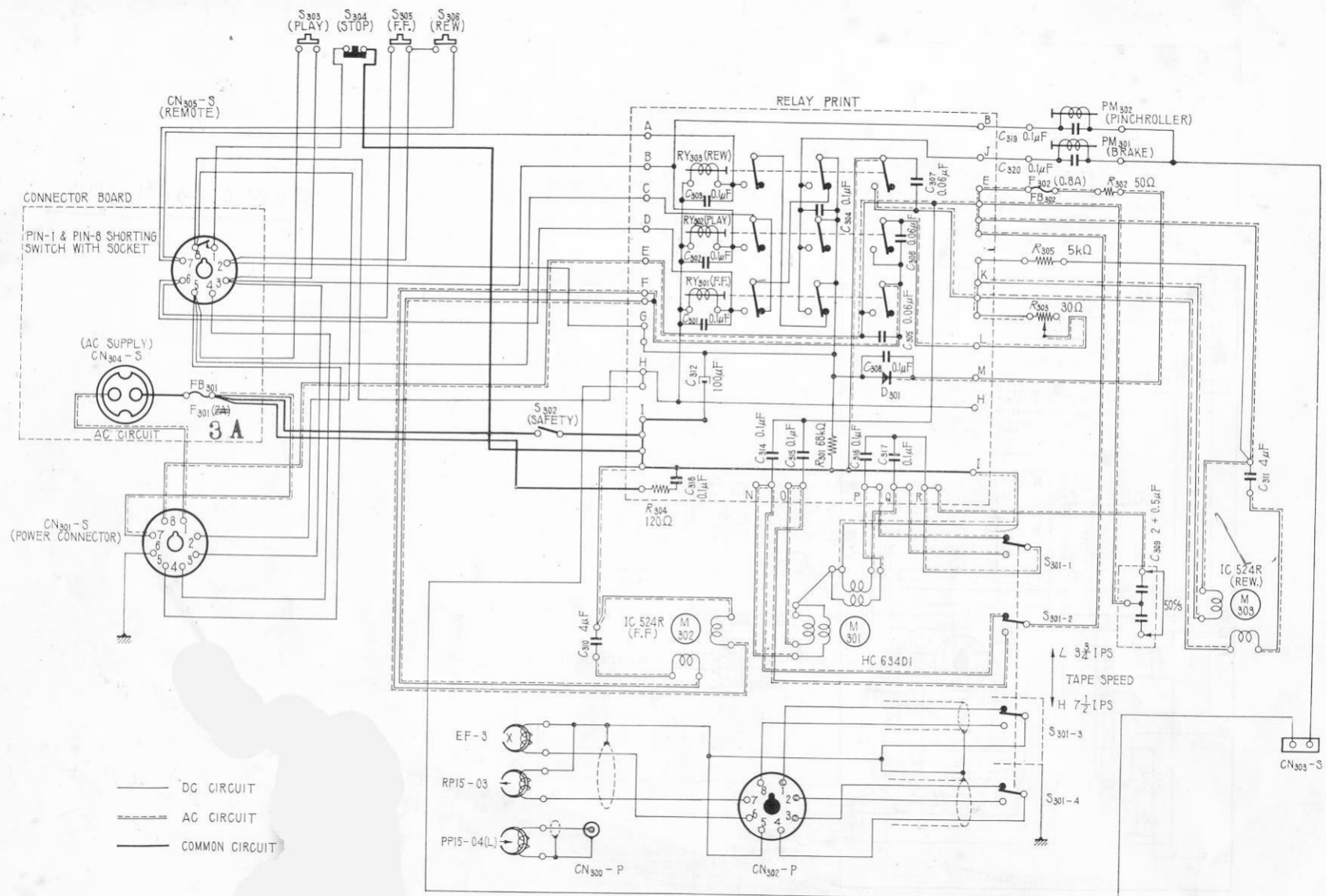
Schematic Diagrams

ELECTRONIC CIRCUIT

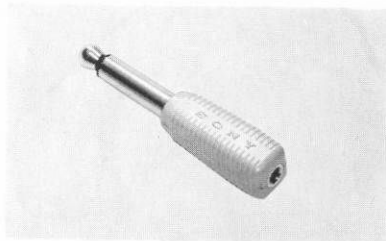




TAPE TRANSPORT CONTROL CIRCUIT

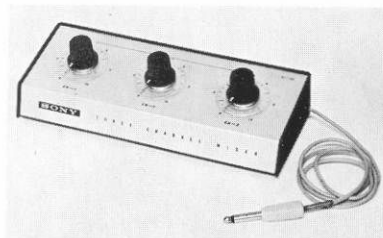


Recommended Accessories



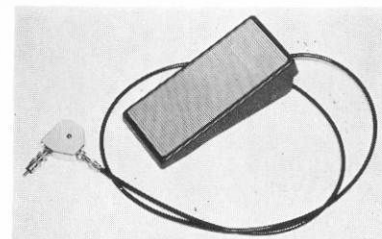
Plug Adaptor, PC-2

Use when the jack on this recorder is of the standard, while you want to make a connection with a miniature size plug.



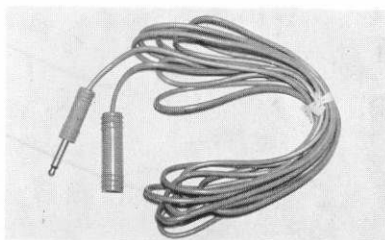
Microphone Mixer, MX-600

3-channel, 600 ohm Microphone and/or Line Input mixer with independent volume control for each channel.



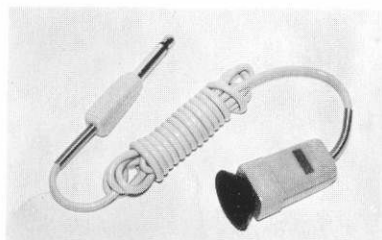
Foot Switch, FS-3

Convenient device for hands-free INSTANT STOP operation in course of recording or reproduction of tape.



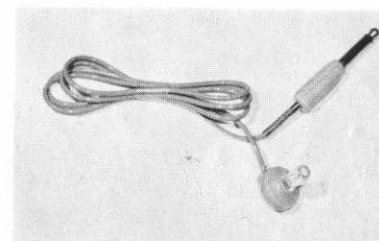
Extension Cord, EC-5A, -10A, -25A

EC-5A (5 meter long), EC-10A (10 meter long), EC-25A (25 meter long) series of microphone cords for extension of microphone.



Telephone Pick-up, TP-4

For recording of telephone conversation on tape.



Crystal Earphone, CE-4

Crystal earphone of high impedance for private listening or monitoring while recording.

